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10/562,935	02/03/2006	Akihiko Nishio	19289.05198	8746

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EXAMINER	
AKBAR, MUHAMMAD A	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,935	NISHIO, AKIHIKO	
	Examiner	Art Unit	
	Muhammad Akbar	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments filed 06/07/2007 have been entered. Claims 1-12 have been cancelled. Claim 13-26 have been added as new.

Response to Arguments

2. Applicant's arguments filed 06/07/2007 have been fully considered but they are not persuasive.

Regarding claim 13, In response to the applicants arguments with respect to the new claim 13 wherein applicant argues on page 9 that Toshimitsu fails to teach or suggest the feature recited in claim 13 of determining the feedback information carrier number in accordance with reception quality. The examiner respectfully disagrees.

Toshimitsu reference teaches the sub-carrier number determination section (15 of fig.6) that determine the NAK signal (i.e. feedback information) with the value of subcarrier (L) number (i.e. subcarrier L value notified from the controller 8 of fig.6) in accordance with the measured reception quality (see fig.3,4,6,11,abstract and col.5 lines 16-52 ,col.6 lines 14-43).(i.e. sub-carrier number determination section (15 of fig.6) determine the feedback information (generating by NAK signal) and selection section (7 of fig.6) select the subcarrier number L set to 1 in accordance with the reception quality (depends on error of the signal) of multicarrier transmission system).

Moreover, Nobukiyo discloses a mobile communication system includes a base station which is performed transmission control of data to the mobile station by using quality information (i.e. feedback information) from mobile station (see fig.1-4, col. 2 lines 22-37), comprising: a reception section (22 of fig.2) that received packet information with data mapped via up link from mobile station (see fig.1-4,11-12 and col. 8 lines 36-54); measuring reception quality based on the information signal; and base station determines a pilot signal (carrier) having the measured reception quality information as a feedback information carrier (see fig.22 and col.5 lines 35-40, col.11 lines 1-27).

Therefore, Nobukiyo and Toshimitsu teach the limitation of claim 13 as discussed above.

Regarding claim 14, applicant argues on page 10 that Toshimitsu fails to teach or suggest the feature recited in claim 14 of determining a carrier having a quality among plurality of carriers as a feedback information carrier. The examiner respectfully disagrees

Toshimitsu teaches the sub-carrier number determination section (15 of fig.6) that determine the value of sub-carrier (L) number (i.e. sub-carrier L value notified from the controller 8 of fig.6) and set to 1 for satisfactory quality (i.e. in accordance with the measured reception quality)(see fig.3,4,6,11,abastract and col.5 lines 16-52 ,col.6 lines 14-43).

(i.e. sub-carrier number determination section (15 of fig.6) determine the feedback information (generating by NAK signal) sub-carrier number L set to 1 among the sub-carriers in accordance with the reception quality satisfactory (depends on error of the signal) of multi-carrier transmission system).

Moreover, Nobukiyo further discloses a base station communicates with N-number of mobile stations (see fig. 21 and col.14 lines 8-35) [plurality of communicating stations]; and upon receiving quality reception information from the mobile station, the base station judgment section select the best reception quality among the plurality of carrier based on feedback indicator (see fig.21 and col.14 lines 19-35).

Therefore, Nobukiyo and Toshimitsu teach the limitations of claim 14 as discussed above.

Regarding claim 13, 14, In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established' by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, the teaching, suggestion, or motivation was found in the references themselves and in the knowledge generally available to one of ordinary skill in the art. As stated in the last Office Action, and repeated herein, it would have been obvious to

one of ordinary skill in the art at the time the invention was made to modify base station constitution of transmission control of data to the mobile station based on feedback information and measure the reception quality (as taught by Nobukiyo) by incorporating reception section by OFDM symbol detector, level detector and judgment section wherein received multi-carrier signal with data mapped on plurality of carrier from mobile stations and judging the best quality value (as taught by Toshimitsu) to improve selection of sub-carrier signal and reduce error and detection probability (see col.3 lines 28-33) of multi-carrier communication.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim(s) 13 –17 and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobukiyo et al (U.S. Patent No. 6,993,294 B2) and in view of Toshimitsu (U.S. Patent No. 6,735,256 B1).

Re claim(s) 13 and 25, Nobukiyo discloses a mobile communication system includes a base station (i.e. multi-carrier apparatus) that performed transmission control of data to the mobile station by using feedback indicator with quality information from mobile station (see fig.1-4,22, 23 and col. 2 lines 22-37,col.14 lines 54-65), comprising:

a reception section (22 of fig.2) that received packet information with data mapped (i.e. multicarrier signal) via plurality of up-link channel (number of transport channel multiplexed on a reception frame, see col.10 lines 9-15) from mobile station (see fig.1-4,11-12,22 and col.5 lines 27-30, col. 8 lines 36-54);

measuring the reception quality based on feedback indicator information ; and base station judging to select a pilot signal (carrier) having the best measured reception quality information (see fig.22 and col.5 lines 35-40, col.11 lines 1-27).

But Nobukiyo fails to disclose explicitly determining section and plurality of carriers. However, Toshimitsu teaches radio communication system for performing transmission/reception of a packet in a multi-carrier transmission between a base station and a plurality of terminal stations (see col.2 lines 64-67) (same field of endeavor) and Toshimitsu further teaches the sub-carrier number determination section (15 of fig.6) that determine the NAK signal (i.e. feedback information) with the value of subcarrier (L) number (i.e. subcarrier L value notified from the controller 8 of fig.6) in

accordance with the measured reception quality (see fig.3,4,6,11,abastract and col.5 lines 16-52 ,col.6 lines 14-43).

(i.e. sub-carrier number determination section (15 of fig.6) determine the feedback information (generating by NAK signal) and selection section (7 of fig.6) select the subcarrier number L set to 1 in accordance with the reception quality (depends on error of the signal) of multicarrier transmission system).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify base station constitution of transmission control of data to the mobile station based on feedback information and measure the reception quality (as taught by Nobukiyo) by incorporating reception section by OFDM symbol detector, level detector and judgment section wherein received multicarrier signal with data mapped on plurality of carrier from mobile stations and judging the best quality value (as taught by Toshimitsu) to improve selection of sub-carrier signal and reduce error and detection probability (see col.3 lines 28-33) of multicarrier communication.

Re claim 14, 26, as discussed above with respect to claim 13 and 25, Nobukiyo further discloses base station communicates with N- number of mobile stations (see fig. 21 and col.14 lines 8-35) [plurality of communicating stations]; and upon receiving a quality reception information from the mobile station, and base station judgment section select the best reception quality among the plurality of carrier based on feedback indicator (see fig.21 and col.14 lines 19-35).

Toshimitsu teaches the sub-carrier number determination section (15 of fig.6) that determine the value of sub-carrier (L) number (i.e. sub-carrier L value notified from the controller 8 of fig.6) and set to 1 for satisfactory quality (i.e. in accordance with the measured reception quality)(see fig.3,4,6,11,abastract and col.5 lines 16-52 ,col.6 lines 14-43). (i.e. sub-carrier number determination section (15 of fig.6) determine the feedback information (generating by NAK signal) sub-carrier number L set to 1 among the sub-carriers in accordance with the reception quality satisfactory (depends on error of the signal) of multi-carrier transmission system).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify base station constitution of transmission control of data to the mobile station based on feedback information and measure the reception quality (as taught by Nobukiyo) by incorporating reception section by OFDM symbol detector, level detector and judgment section wherein received multicarrier signal with data mapped on plurality of carrier from mobile stations and judging the best quality value (as taught by Toshimitsu) to improve selection of sub-carrier signal and reduce error and detection probability (see col.3 lines 28-33) of multicarrier communication.

Re claim(s) 15 and 16, as discussed above with respect to claim 14, Nobukiyo further discloses base station communicates with N- number of mobile stations (see fig. 21 and col.14 lines 8-35) [plurality of communicating stations] and upon receiving a quality reception information from the mobile station, and base station judgment section

select the best reception quality among the plurality of carrier based on feedback indicator (see fig.21 and col.14 lines 19-35).

Toshimitsu teaches base station includes level judging section (255 of fig. 7) wherein determine the best measured reception quality value by performing respective sub-carrier energy detection result (n pieces) then selector select the good quality value (m pieces) then comparator judges the best quality result (see fig.8) to control the transmission (see fig.7-8, col.7 lines 14-39) ; and judgment section (25 of fig. 7) determines feedback information carrier based on a multi-carrier signal received immediately before transmitting the feedback information (see fig.7-9,col.7 lines14-39).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify base station communicates with multiple mobile station and large number of data can be transmitted to mobile station based on feed back information (as taught by Nobukiyo) by incorporating judgment section wherein determine best reception quality feedback information and determine feedback information carrier based on multicarrier signal immediately before transmitting the feed back information (as taught by Toshimitsu) to reduce error ratio by selecting best reception quality value and high reliable multicast transmission can be possible.

Re claim 17, as discussed above with respect to claim 14, Nobukiyo further discloses multicarrier communication apparatus further comprising a transmission section (24 of fig.2) that transmits information about feedback information

carrier and reception section (22 of fig.2) receives a multicarrier signal with feedback information mapped on feedback information carrier (see fig. 1-4, and col. 5 lines 31-40, col.14 lines 54-65 and claim 1).

Re claim 20, as discussed above with respect to claim 14, Nobukiyo further discloses multicarrier communication apparatus further comprising a transmission control section (24 of fig.2) that transmits feedback information using feedback information carrier (see fig.2 and col.23-40)

Re claim 21, as discussed above with respect to claim 20, Nobukiyo teaches all the limitations except a spreading section that spread predetermined feedback information carrier using a spreading code for feedback information. However, Toshimitsu teaches OFDM symbol detector (23 of fig.7) wherein performing fast fourier transform for processing code and spreading signal as sub-carrier of the reception signal with predetermined feedback information (see fig.7 and col.7 lines20-30)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify base station constitution of transmission control section that transmits feedback information using feedback information carrier (as taught by Nobukiyo) by incorporating OFDM symbol detector for processing code and spreading signal as sub-carrier of the reception signal and predetermined feedback

information (as taught by Toshimitsu) to get multiple sub-carrier signal to generate a NAK signal to mobile station for receiving feedback information of transmission control.

Re claim 22, as discussed above with respect to claim 14, Nobukiyo further discloses feedback information (i.e. uplink channel information) includes channel quality information, ACK and NACK information (see fig.7 and col.10 lines1-25).

Re claim 23 and 24, as discussed above with respect to claim 13, Nobukiyo further discloses a base station and mobile station apparatus (see fig.1,2) comprising:

the multicarrier communication apparatus includes reception section that received multicarrier signal with data mapped, measuring the reception quality and judgment section (determination) wherein judges quality of reception signal based on feedback information (see fig.1-4, col.2 lines 22-38 col. 8 lines 5-54).

6. Claim(s) 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobukiyo as modified by Toshimitsu as applied to claim 13 and 17 above and further in view of Bae et al (U.S. Patent No. 5,832,387)

Re claims 18 and 19 Nobukiyo discloses in combination with Toshimitsu with respect to claim 13 and 17, Nobukiyo further discloses multicarrier communication apparatus control the transmission based on the reception quality from the mobile station and quality information is transmitted only as required therefore power

consumption and interference wave power can be reduced as well as capacity of the uplink can be increased(see fig.7 and col.6 lines 14-31) but failed to disclose transmission section includes calculation section that calculates required transmit power so that the reception quality of feedback information carrier becomes a acquired quality; and calculates the required transmit power based on a difference between the reception quality of feedback information carrier and required.

However, Bae teaches adaptive power allocation method and apparatus for multi-carrier transmission system wherein calculation section (see block 400 of fig.5) calculate signal to noise ratio (SNR) [i.e. quality of the channel] for each sub channel and determining the transmission power value for each sub channel so that power can be allocated as required (see fig.5 block 402);

Bae further teaches determination of required transmit power value based on the differences of corresponding sub channel SNR quality (lower value) and calculated SNR value's (see fig.5 and 8,col.3 lines7-28) .

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made multicarrier communication apparatus control the transmission based on the reception quality and feedback information from the mobile station as modified by determination of best quality reception value (as taught by Toshimitsu) to incorporate calculation section for determining the transmit power value based on the feedback information and SNR values (as taught by Bae) to improve transmission efficiency as well as reduce power loss due to power is not allocating /transmitting to the negative or zero value of SNR channel.

Conclusion

7. The amendment necessitated the new ground(s) of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Muhammad Akbar whose telephone number is (571)-270-1218. The examiner can normally be reached on Monday- Thursday (7:30 A.M.-5:00P.M).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lana Le can be reached on 571-272-7891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MA

12-07-07

LANA LE
PRIMARY EXAMINER